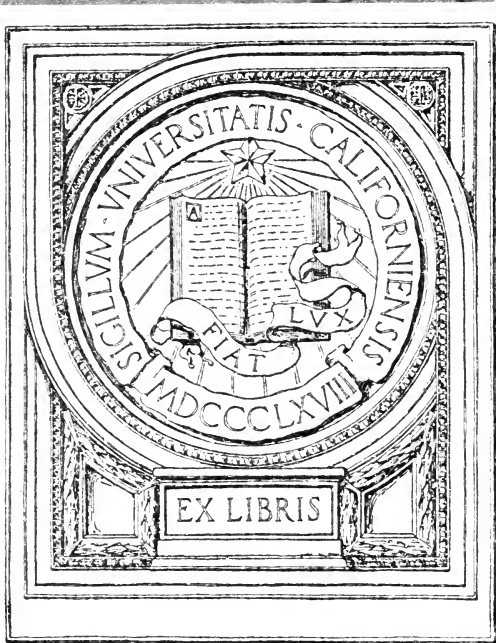


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THE SERVICE OF STATISTICS TO HISTORY

By CHARLES H. HULL, Ph. D.

[Reprinted from Quarterly Publications of the AMERICAN STATISTICAL
ASSOCIATION, March, 1914]

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THE SERVICE OF STATISTICS TO HISTORY.*

BY CHARLES H. HULL, PH. D., *Professor of American History, Cornell University.*

When your representative honored me with an invitation to take part in this discussion, I told him (what, indeed, he very well knew) that I had neither statistical experience nor statistical knowledge, and had paid but slight attention to the multifarious discussion upon the relation of history to the newer social disciplines. I could give, therefore, only my personal impressions upon the service of statistics to history, and those but provisionally. He assured me that more was not expected, and I shall not attempt more.

If the second part of this morning's program had been submitted to the founders of the American Statistical Association, it would have perplexed them sorely. Seventy-five years ago the word "economics," as a substitute for political economy (or a criticism upon it) was just making its way into the language, under the dubious aspics of those most unstatistical persons, Thomas Carlyle and Waldo Emerson. The term "biology," recently invented in Germany, had acquired, as yet, no other meaning, among those who knew it in English at all, than that of a particularly vivid form of biography—the story of a man's life as it might be talked rather than written. The hybrid "sociology" was still unbegotten. That statistics should ever serve such strange gods, might well have given the founders pause. Towards history, however, they could have turned with more confidence. Both as a word and as a subject history was, in their day, already venerable, and still respectable; and the service which statistics might render it was, to their minds, entirely clear. In the "Address put forth by the Association at the period of its first establishment,"† its spokesman, the polygraphic Professor Edwards of Andover Theological Seminary, had defined statistics as "the ascertaining and bringing together of those facts which are fitted to

*Paper read at the seventy-fifth anniversary meeting of the American Statistical Association, Boston, Mass., February 14, 1914.

†This address is printed in "Constitutions and By-Laws of the American Statistical Association, with a List of Officers, Fellows and Members. Boston: 1844."

illustrate the conditions and prospects of society." It followed that "every subject in truth forms a part of statistics," and he naturally concluded that the labors of the Association should prove "of inestimable value to the future historian in our own and other lands."* This sweeping conception of statistics, quite in the temper of contemporary Germany practice, was promptly illustrated by the contributions which the Association's secretary, the Rev. Joseph B. Felt, made to the first volume of its "Collections." They are, doubtless, known to many of you, and with them in mind it becomes easy to understand why Schloezer's awkwardly translated dictum† that "statistics is history in a state of progression; statistics are history at a stand," should have met Professor Edwards's full approval, and, as we may infer from Colonel Wright's fondness for the neater version of the same dictum, that "history is past statistics, statistics present history," have become, for a time, almost a part of the Association's creed.

Today, however, the situation is reversed. Regarding the nature and extent of the service which statistics may render to economics, to sociology, or even to biology there is, I fancy, less dispute than now exists regarding the serviceability of statistics for the purposes of the historian. To understand this change we must appreciate that "history" and "statistics" are words of variable and even ambiguous meaning, and must determine in what meanings we will take them for our present purpose.

History is an old word, blurred by careless handling. Of its many meanings two only need engage our attention. Sometimes "history" denotes a method, sometimes a subject. The historical method of ascertaining and presenting past events is, in a general way, familiar to us all. We readily appreciate its applicability to various subjects, and the slightest inquiry into historiography would show that the historical method has, in fact, found most diverse applications. But the interest and importance of its application to the past acts of man as a

*"Constitution," etc., pp. 13, 21, 23.

†*Ibid.*, p. 13. Achenwall had written: "die Lehre von der Statsverfassung eines oder mehrerer einzelnen Staten, ist die Statistik." Schloezer, who brought out a seventh enlarged edition of the *Abriss* (Goettingen, 1790) after Achenwall's death, inserts in the text, after "Statistik," a parenthetical explanatory "(Staatskunde)," and adds in a note: "Staatskunde [d. h. Statistik] ist eine stillstehende Statsgeschichte; so wie diese eine fortlanfende Staatskunde." Pt. 1, p. 5.

social being, his wars, arts and industries, his church and state, so far outweigh all other applications of the historical method that, as a subject, history has come to mean a reasoned narrative of man's social doings in the past, or of some of them. Like the dyer's hand, the historian's method is subdued to what it works in; and history as a method has been profoundly affected both by the antiquity of its beginnings, in an age of intellectual naivety and by the human character of the subjects which historians, following in some measure the pattern set by their predecessors, have found themselves called upon to deal with.

Statistics also has two meanings, similarly related. Statistics is a scientific method of wide applicability. Statistics are a body of facts and inferences—usually but not necessarily social—collected and interpreted according to that method. We have, then, two methods, the historical and the statistical, each, by preference applied, as it happens, to the same or similar matters, producing, the one history as a subject, the other statistics as a subject. The question remains to be answered, whether the two methods are as similar as the subjects to which they are applied.

Statistics is a newer word than history, and its method is even newer than its name. Achenwall, who invented the name in the middle of the eighteenth century, referred it to the Italian word *statista*, a statesman;* and for him, as for his follower Schloezer, statistics meant a general account of contemporary affairs, of the national fabric in widest sense, such as might be of use to a public man: Keltie's "Statesman's Year Book" is a modern English example. Robert Mills's "Statistics of South Carolina" (1826) and George White's "Statistics of Georgia" (1849) are earlier examples from American practice. The statistics of these compilers, which are also the statistics of the American Association "at the period of its first establishment," can scarcely be said to have any conscious method. Their collections were quite miscellaneous, not to say capricious. They did, indeed, show a predilection for such data as might be expressed "in terms of number, weight and measure."† But they were by no means

*G. Achenwall. *Abriß der neuesten Staatswissenschaft der beutigen vornehmsten europäischen Reiche*. 1749. Einleitung.

†Sir William Petty. *Political Arithmetick*. 1690. Preface.

restricted to such, and seldom used them comparatively or in mass measurement.

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As a method, then, statistics took its shape within the past seventy-five years, and it fell, consequently, under the influence of those instrumental devices which, as applied by all the natural sciences, have imparted to nineteenth century thought its most pronounced character. The first to apply the familiar method of the natural sciences in the new field of statistics was, perhaps, the Belgian astronomer, Quételet. Instead of concerning himself with such specific details as interested the antiquarian mind of Dr. Felt, Quételet employed the so-called Law of Large Numbers. In order to count and compare the numerous units involved, he arranged them in classes, within each of which all the units, whatever their individual diversities, were assumed to be alike for his enumerative purposes. He thus came to deal in the field of statistics, as all modern sciences do in their several fields, with typical abstractions. These are, no doubt, of great instrumental value for scientific purposes; but they can claim to find no exact counterpart in any real object. None of us has ever met "the statistical man" any more than "the economic man." They are two of the many convenient fictions of science. By the application, then, of scientific method to statistical facts, Quételet began, about the time when this Association was founded, to deduce such general social laws as seemed to him to warrant some measure of quantitative prediction about society as a whole, though he was careful to say* that they implied nothing, of necessity, as to any particular member of society. The measure of his success in what he came to call "social physics"† may have been somewhat less than he anticipated, but it was at least sufficient to make most modern statisticians his conscious or unconscious followers. Statistics had found their method, which is the general method of the natural sciences. It operates, as the sciences all do, with "laws" which apply to aggregates and averages (or other types) but not to the peculiarities of individuals. A rhombohedral crystal of oxide of silicon with trapezohedral tetartohedrism

*Recherches sur la loi de croissance, pp. 1, 2; Recherches sur la penchance au crime, pp. 2, 80.

†Physique sociale, par Ad. Quételet. Bruxelles. 1869. The first version of this book, published in 1834, he called *Sur l'homme et le développement de ses facultés, ou essai de physique sociale*.

is quartz,—and there you are. It may be large or small, green, purple, yellow, or pink. It is still quartz.

Following statistics, the newer social disciplines, folk-psychology, sociology, and the rest, have developed their methods under the same influence of all-conquering natural science, whose “glory fills the world with loud report.” It was inevitable, then, that history, the oldest, of the social disciplines, should be called upon to mend the ancient error of its ways and by installing a modern scientific outfit of general laws and instrumental abstractions, to elevate itself to the rarefied atmosphere where true predictive science dwells. The trumpet of this summons gave no uncertain sound. Comte was confident; Buckle was cock-sure; and the modern materialistic philosophy of history threatens the bourgeois historian with the same extinction in which socialism is presently to engulf all capitalistic institutions, unless he shall straightway forsake his abhorrent, and probably venial pretense of an interest in the deeds and characters of individual men, and shall concern himself solely with the class struggle and the necessary laws of its evolution.

“Evolution,” ladies and gentlemen, is the hocus-pocus of the scientific nineteenth century, just as “nature” was the hocus-pocus of the revolutionary eighteenth, and “society” promises to become the hocus-pocus of a sympathetic twentieth. Man, no doubt, will carry on, as he did through preceding centuries.

Meanwhile for the mere historian to object when others, chiefly non-historians, seek, in the sacred name of science, to apply their methods to a subject-matter which he has long dealt with in a manner lamentably unscientific, would be at once arrogant and futile. But without claiming the privilege of such folly, he may perhaps justly ask, he may even be generously allowed, to determine for himself what sort of results he, as a historian, will aim to achieve. And in so far as the methods of natural science may be incapable of reaching that sort of results, he may, for his part, abstain from employing them, not worrying himself unduly about the pains and penalties that shall in consequence be denounced upon him. If, by the use of scientific laws, results superior to his shall be produced, recognition will surely reward the achieve-

ment, and the mere historian will not be the last, let us hope, to acknowledge the new day. Meanwhile, however, we must take history as precedent and practice have shaped it, historians as in consequence they are. The serviceability of the statistical method for the past and present purpose of such persons is the subject of our immediate enquiry.

The majority of intelligent historians (if any historians may be allowed to be intelligent) would agree, I fancy, that the statistical method, being a specific type of the method of natural science, is not their proper method and cannot become their principal tool. For the ultimate units with which the historian deals are not atoms, or any sort of instrumental abstractions, whose individual differences, if any exist, may be ignored, but they are men and the deeds of men. All social phenomena are at bottom human deeds, with qualitative differences, each from each. These it is the characteristic business of the historian to study. Men and the differing deeds of men, as they present themselves for historical contemplation, seem to him too complex and too variously conditioned to be subjected to the concept of general law, as the natural sciences derive that concept from the observation of phenomena assumed to be uniform. He, for his part, can seldom find, and may never assume, that his observation of one man is as significant as his observation of another. He must rather assume the existence among men and their acts of those qualitative differences which are a fundamental fact of all organic life. This involves him in no quarrel with science. Science too freely confesses the qualitative differences of individuals. But for the purposes of science they are overlooked because they are of negligible importance. For the purposes of history, however, their importance is often the greatest.

Let me illustrate. On the first day of November in the year 1700 there died of some obscure fever at his sumptuous domicile in Madrid a married Spaniard in the thirty-ninth year of his age, whose entire adult life had been passed in public office. These, I believe, are all the data that a Körösi would need to locate the deceased in that social group which should give full weight to the statistical significance of his death. A Ranke notes, however, that the death of Charles the Bewitched, neither entirely king nor completely imbecile, brought on the

War of the Spanish Succession, and that his reluctance to make a will betimes gave opportunity for intrigues which affected the European balance of power for a century thereafter.

The historian, then, cannot rely upon the statistical method, or upon any similar method, as a means of determining the significance of a specific event. No more can he, by the use of statistical laws, or by any other method of prognosis, undertake to tell what specific incidents of historical interest must happen. If prediction be the distinguishing mark of science, the historian must confess with humility, but let us hope also with tranquility, that he is not a scientific man. His method of explanation is a retrogressive analysis. Diagnosis, not prognosis is his art. As the physician applies his skill and experience to specific cases, not to categories, and is satisfied to determine what ailment produced the symptoms that he finds in his present patient, leaving the question quite open whether certain similar symptoms, in a patient of a different temperament, are due to the same or different disease, so the historian seeks to explain his events one by one, each as an individual case for itself. Laws, deduced by inference from other cases, are for him never demonstrative, but at most hueristic. They may serve to turn his attention to a probable cause but he will not be satisfied that it is the real cause until he has examined it individually. In this the method of history differs radically from the method of statistics. The method of statistics is, by consequence, only of indirect service to the historian.

May I sum up my conclusions so far by rewriting a statement of a former President of this Association? "The student of social science," said Colonel Wright,* "uses the results of statistical enquiry because he recognizes with the German Schlosser† that 'statistics is history ever advancing,' and that if he wishes to . . . keep himself fully and thoroughly informed of progress in every direction, he must use the statistical or historical method." The position which I have tried to present this morning would be better expressed by saying instead: The historian, as a student of social phenomena,

*Practical Sociology. 5th ed. 1904. P. 8.

†This apparent confusion between Friedrich Christoph Schlosser, the historian (1776-1861), and August Ludwig Schloezer, the statistician (1735-1809), appears in Edwards's address. Wright may have taken it from him.

uses the results of statistical enquiry whenever they appear to be to his purpose, just as he might use the results of any other science; for he recognizes that if he wishes fully and thoroughly to understand past progress in every direction, he must take all knowledge to be his province. But in using the results of statistical enquiry, he employs the historical and not the statistical method.

While, however, the historian uses statistics in the same manner as he uses the facts and theories of other sciences, the circumstance that the historical and the statistical methods both find their most fruitful application in the social field, enables the statistician to furnish historical data in a measure far more ample than will, say, the astronomer, or the chemist, or the embryologist. How frequently the historian shall find statistics among his sources will depend upon the direction to be taken by future applications of the statistical method on the one hand, and of the historical method on the other.

If, for example, Professor Muensterberg, having perfected his machinery for measuring the physical reactions of individuals in moral predicaments, shall furnish the world some day, with an accurate ethical calibration of the normal American or Teuton, the future historian will be greatly concerned, I am sure, to ascertain and to compare with the type, the reaction record of the fiftieth President of the United States and the tenth Emperor of Germany. You may regard the illustration as fantastic. But principles appear in extremes. What technical or financial obstacles meanwhile impede the collection of such statistics as the historian would like to use is not for him to say; but he may selfishly hope that the American Statistical Association will presently succeed in overcoming them all.

A change or extension in the subjects of history might also increase the availability of the data of statistics as materials for the historian. Freeman, for example, has declared that "history is past politics, politics is present history,"* and Seeley says that "it is with the origin and development of states that history deals."† Their dicta voice the fashion of their day. Other times, other manners. In the era of military feudalism, historians wrote chronicles of camp and court.

*E. A. Freeman. *Lectures to American Audiences*. 1882. P. 20.

†Sir J. R. Seeley. *The Expansion of England*. 1883. P. 148.

The Reformation obliged intelligent men to become more or less theologians, and from Luther to Voltaire ecclesiastical history predominated. The revolutions of the eighteenth century in America and France brought new subjects of historical study into vogue. Not only did Guizot and Hallam trace the constitutional development of France and of England, writing always with an eye upon the political situation in which they lived, but Grote constructed a ponderous History of Greece in support of the Victorian Whigs, and Mommsen launched a learned History of Rome against Napoleon the Second.

Observing thus how, with the shifting of contemporary interests in the past, the historical method has been applied (like the statistical) to widely diverse subjects, we are prepared to find, in our own time, that the increasing pressure of social and economic problems, into which, by the help of Darwin and of Marx, we seem to see more deeply than our fathers could, must in its turn induce the application of the old method to the new stuff of social and economic history. And since the subject matter of statistics is largely social and economic, the future historian, though working still chiefly in the old way, interesting himself, among other things in the personality of a leader of invention, a captain of industry, a freebooter among insurance companies and railways, or an organizer of international peace, may make, indeed he must make larger and larger use of the statistics that are and of the statistics that are to be.

Once more may I illustrate? It was long the habit of American historians to attribute our prosperity in 1789-1792 to the adoption of the Constitution in 1788. Of recent years, however, it has been more generally believed that, for reasons altogether independent of the Philadelphia Convention, the tide of prosperity was already swelling in 1787, and that the Constitution was borne to ratification upon its rising crest. This later view is, to my mind, not only the more probable inherently, but also the better supported by evidence; and much of that evidence is statistical. It is here characteristic, and further illustrative, that the new conclusion was not the immediate result of any statistical enquiry, but rather of a general judgment, such as historians are constantly pondering in their own minds, and then weighing and testing by all

appropriate means. In this case the chief means chanced to be statistical. And if, incidentally, some historian, in dealing with it, has fallen into a trap such as field errors in statistics leave ever open for the unwary, and, for example, has assumed to measure the growth of our foreign commerce by the use of figures which register, in part at least, merely the increasing efficiency of the newspapers in recording the entries and clearances of vessels, that blunder proves, to my mind, not that the true method for history is the statistical method, but merely that the historian needs, when using statistics as a source, just as he needs when using a scarab, or book of personal reminiscences, or a party platform as a source, to exercise an alert and competent criticism. However, the extent to which, being competent, he shall use statistical sources, or some other sort of sources, must depend chiefly upon the sort of things with which, as a historian, he shall chose to deal by his historical method.

It is even conceivable, to some minds, that the vogue in history may at length alter so completely as to eliminate altogether the element of personal interest, and that historians will some day deal solely with the social masses that statisticians have measured. General Walker will then appear more of a historian, even, through the footed columns of the Tenth Census than through the footnotes and pages of "The Second Army Corps," and a more enlightened age will find in the tables and diagrams of a municipal report greater historical eloquence than its forbears admired in Michélet. Possible these things are: to me they do not seem probable. And it is plain that before they shall come to pass, "history," as a term common to all the European languages, must have revolutionized its accepted meaning. Today, being no prophet, I have endeavored rather to deal with it in the meaning which it seems yet to possess.

One more comment and I am done. If any one of you is disposed to feel that even in their own way historians have made but grudging use of statistics, I beseech him to reflect, first, how difficult it is to get statistics read—not intelligently, but at all—and, second, how small is the fraction of historical time for which statistics give any appreciable variety of information.



